

**Final
Site-Specific Field Sampling Plan Addendum**

**Supplemental Site Investigation
Former Washrack, Building 1740, Soldier's Chapel
Parcel 127(7)**

**Fort McClellan
Calhoun County, Alabama**

Prepared for:

**U.S. Army Corps of Engineers, Mobile District
109 St. Joseph Street
Mobile, Alabama 36602**

Prepared by:

**IT Corporation
312 Directors Drive
Knoxville, Tennessee 37923**

**Task Order CK10
Contract No. DACA21-96-D-0018
IT Project No. 796887**

September 2000

Revision 1

Table of Contents

	Page
List of Tables	ii
List of Figures	ii
List of Acronyms.....	iii
1.0 Introduction.....	1-1
2.0 Summary of Site Investigations	2-1
2.1 Environmental Sampling	2-1
2.2 Surface and Depositional Soil Sampling	2-1
2.3 Subsurface Soil Sampling	2-2
2.4 Groundwater Sampling	2-2
2.5 Water Level Measurements and Groundwater Flow	2-3
3.0 Proposed Field Activities	3-1
3.1 Environmental Sampling	3-1
3.2 Residuum Monitoring Well Installation	3-1
3.3 Bedrock Monitoring Well Installation	3-1
3.4 Groundwater Sampling and Rationale	3-3
3.5 Investigative-Derived Waste Management and Disposal	3-3
3.6 Site-Specific Safety and Health	3-3
4.0 Project Schedule.....	4-1
5.0 References.....	5-1
Attachment 1 – List of Abbreviations and Acronyms	

List of Tables

Table	Title	Follows Page
2-1	Surface and Depositional Soil Analytical Results	2-1
2-2	Subsurface Soil Analytical Results	2-1
2-3	Groundwater Analytical Results	2-1
3-1	Site Sampling Rationale	3-3
3-2	Groundwater Sample Designations and QA/QC Sample Quantities	3-3

List of Figures

Figure	Title	Follows Page
1-1	Site Location Map	1-1
2-1	Sample Location Map	2-1
2-2	Soil and Groundwater Concentrations Exceeding Residential Human Health SSSLs	2-1
2-3	Groundwater Elevation Contour Map	2-3
3-1	Proposed Sample Location Map	3-1

List of Acronyms

See Attachment 1, List of Abbreviations and Acronyms.

1.0 Introduction

The Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7) (Figure 1-1) was identified as an area to be investigated prior to property transfer. The site was identified as a Category 7 site in the environmental baseline survey (Environmental Science and Engineering, 1998). Category 7 sites are areas that are not evaluated and/or require further evaluation. A site-specific field sampling plan (SFSP) attachment and a site-specific safety and health plan (SSHP) attachment were finalized in December 1998 to complete a site investigation (SI). The SI included field work to collect 13 surface soil samples, 13 subsurface soil samples, 3 groundwater samples, and 3 depositional soil samples to determine whether potential site-specific chemicals were present at concentrations that would present an unacceptable risk to human health or the environment. The SI analytical results were compared to human health site-specific screening levels (SSSL); ecological screening values (ESV); and background screening values for Fort McClellan (FTMC). The SSSLs and ESVs were compiled by IT Corporation (IT) as part of the human health and ecological risk evaluations associated with SIs being conducted under the Base Realignment and Closure (BRAC) Environmental Restoration Program at FTMC. Based on the comparisons of the analytical data to the SSSLs, a supplemental SI is required to determine the horizontal and vertical extent of groundwater contamination.

This addendum to the SFSP attachment will be used in conjunction with SSHP, the installation-wide work plan (IT, 1998a), and installation-wide sampling and analysis plan (SAP) (IT, 2000). The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

This addendum to the SFSP attachment for FTMC has been prepared to provide technical guidance and rationale for sample collection and analysis at the Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7) (Figure 1-1). IT will collect samples at this site as part of a supplemental SI effort. The purpose of the supplemental SI is to define the horizontal and vertical extent of carbon tetrachloride in groundwater. The proposed supplemental SI field activities are based on the discussions and site visit on May 10, 2000, with Alabama Department of Environmental Management, U.S. Environmental Protection Agency, Region IV, and the U.S. Army Corps of Engineers, Mobile District.

2.0 Summary of Site Investigations

This section summarizes the SI activities conducted by IT at the Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7), including environmental sampling and analysis, and monitoring well installation activities.

2.1 Environmental Sampling

The environmental sampling performed during the SI at the Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7) included the collection of surface and depositional soil samples, subsurface soil samples, groundwater samples, surface water samples, and sediment samples for chemical analysis. The sample locations were determined by the on-site geologist based on the sampling rationale, presence of surface structures, site topography, and buried and overhead utilities. Analytical results were compared to residential human health SSSLs, ESVs, and background screening values (metals and semivolatile organic compounds [SVOC]), as presented in Tables 2-1 through 2-3. Sample locations are presented on Figure 2-1. Samples exceeding the SSSLs are presented on Figure 2-2.

2.2 Surface and Depositional Soil Sampling

Thirteen surface soil samples and three depositional soil samples were collected for chemical analysis at the Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7). Surface and depositional soil samples were collected from the upper 1 foot of soil at the locations shown on Figure 2-1. As shown on Table 2-1, six metals and two SVOCs exceeded the SSSLs and background concentrations. Sample locations with analytical results exceeding the SSSLs are presented on Figure 2-2.

Metals. The concentrations of aluminum (PPMP-127-GP11), antimony (PPMP-127-DEP02), copper (PPMP-127-DEP02), lead (PPMP-127-GP06), manganese (PPMP-94-DEP01 and PPMP-127-GP12), and mercury (PPMP-127-DEP02), exceeded residential human health SSSLs and background concentrations.

Semivolatile Organic Compounds. Twenty SVOCs were detected in surface and depositional soil samples collected at Parcel 127(7). Two SVOCs, including benzo(a)pyrene (seven locations), and dibenz(a,h)anthracene (three locations) were detected at concentrations exceeding residential human health SSSLs.

Table 2-1

Surface and Depositional Soil Analytical Results
Supplemental Site Investigation
Former Washrack Building 1740, Soldiers Chapel, Parcel 127(7)
Fort McClellan, Calhoun County, Alabama

(Page 1 of 5)

Parcel					PPMP-127-DEP01					PPMP-127-DEP02					PPMP-127-DEP03					PPMP-127-GP01				
Sample Location					PPMP-127					PPMP-127					PPMP-127					PPMP-127				
Sample Number					KR0029					KR0030					KR0031					KR0001				
Sample Date					08-Mar-99					08-Mar-99					08-Mar-99					13-Jan-99				
Sample Depth (Feet)					0-1					0-1					0-1					0-1				
Parameter	Units	BKG ^a	SSSL ^b	ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS																								
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E+01	8.14E+03			YES	YES	6.98E+03			YES	YES	5.48E+03				YES	8.94E+03			YES	YES
Antimony	mg/kg	1.99E+00	3.11E+00	3.50E+00	ND					5.32E+01		YES	YES	YES	ND					ND				
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	4.90E+00			YES		7.80E+00			YES		5.30E+00			YES		3.30E+00			YES	
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	1.17E+02					5.56E+01					5.65E+01					7.98E+01				
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	1.00E+00		YES			6.80E-01	J				5.20E-01	J				8.90E-01		YES		
Cadmium	mg/kg	2.90E-01	6.25E+00	1.60E+00	ND					ND					ND					ND				
Calcium	mg/kg	1.72E+03			7.87E+03		YES			2.93E+03		YES			2.17E+03		YES			4.05E+04		YES		
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	8.40E+00				YES	1.50E+01				YES	1.08E+01				YES	9.10E+00				YES
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	8.80E+00					6.60E+00	J				4.10E+00	J				ND				
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	7.70E+00					4.24E+03		YES	YES	YES	2.78E+01		YES			1.60E+01		YES		
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	1.18E+04			YES	YES	1.41E+04			YES	YES	1.45E+04			YES	YES	1.01E+04			YES	YES
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	5.59E+01		YES		YES	1.65E+02		YES		YES	5.23E+01		YES		YES	6.44E+01	J	YES		YES
Magnesium	mg/kg	1.03E+03		4.40E+05	1.47E+03		YES			1.48E+03		YES			3.81E+02	J				1.76E+04	J	YES		
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	1.94E+03		YES	YES	YES	9.25E+02			YES	YES	5.03E+02			YES	YES	8.39E+02			YES	YES
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	6.10E-02					2.10E+01		YES	YES	YES	1.10E-01		YES	YES	YES	5.20E-02				
Potassium	mg/kg	8.00E+02			5.06E+02	J				3.04E+02	J				3.33E+02	J				7.10E+02				
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	1.00E+00		YES		YES	1.40E+00		YES		YES	8.50E-01		YES		YES	ND				
Silver	mg/kg	3.60E-01	3.91E+01	2.00E+00	ND					ND					ND					5.30E-01	J	YES		
Sodium	mg/kg	6.34E+02			1.17E+02	B				1.26E+02	B				9.83E+01	B				1.04E+02	J			
Thallium	mg/kg	3.43E+00	5.08E-01	1.00E+00	ND					ND					ND					ND				
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	2.29E+01				YES	2.47E+01				YES	2.22E+01			YES		1.85E+01				YES
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	3.97E+01					7.18E+01		YES		YES	3.91E+01					4.20E+01		YES		
SEMIVOLATILE ORGANIC COMPOUNDS																								
2-Methylnaphthalene	mg/kg		1.55E+02		ND					ND					ND					4.10E-02	J			
Acenaphthylene	mg/kg	8.91E-01	4.63E+02	6.82E+02	ND					ND					ND					7.80E-02	J			
Anthracene	mg/kg	9.35E-01	2.33E+03	1.00E-01	ND					ND					ND					4.70E-02	J			
Benzo(a)anthracene	mg/kg	1.19E+00	8.51E-01	5.21E+00	7.30E-02	J				ND					1.20E-01	J				5.90E-02	J			
Benzo(a)pyrene	mg/kg	1.42E+00	8.51E-02	1.00E-01	9.60E-02	J		YES		ND					1.50E-01	J		YES	YES	7.40E-02	J			
Benzo(b)fluoranthene	mg/kg	1.66E+00	8.51E-01	5.98E+01	1.60E-01	J				ND					2.20E-01	J				9.70E-02	J			
Benzo(ghi)perylene	mg/kg	9.55E-01	2.32E+02	1.19E+02	6.30E-02	J				ND					9.10E-02	J				9.00E-02	J			
Benzo(k)fluoranthene	mg/kg	1.45E+00	8.51E+00	1.48E+02	8.00E-02	J				ND					1.30E-01	J				6.50E-02	J			
Butyl benzyl phthalate	mg/kg		1.56E+03	2.40E-01	ND					ND					ND					6.00E-02	J			
Carbazole	mg/kg		3.11E+01		ND					ND					ND					ND				
Chrysene	mg/kg	1.40E+00	8.61E+01	4.73E+00	1.00E-01	J				ND					1.30E-01	J				6.60E-02	J			
Di-n-butyl phthalate	mg/kg		7.80E+02	2.00E+02	ND					ND					ND					ND				
Di-n-octyl phthalate	mg/kg		1.56E+02	7.09E+02	ND					ND					ND					ND				
Dibenz(a,h)anthracene	mg/kg	7.20E-01	8.61E-02	1.84E+01	ND					ND					ND					ND				
Fluoranthene	mg/kg	2.03E+00	3.09E+02	1.00E-01	1.40E-01	J			YES	ND					1.70E-01	J		YES		7.80E-02	J			
Indeno(1,2,3-cd)pyrene	mg/kg	9.37E-01	8.51E-01	1.09E+02	ND					ND					8.20E-02	J				6.30E-02	J			
Naphthalene	mg/kg	3.30E-02	1.55E+02	1.00E-01	ND					ND					ND					ND				
Phenanthrene	mg/kg	1.08E+00	2.32E+03	1.00E-01	8.90E-02	J				ND					5.70E-02	J				4.00E-02	J			
Pyrene	mg/kg	1.63E+00	2.33E+02	1.00E-01	1.10E-01	J			YES	ND					1.40E-01	J			YES	8.00E-02	J			
bis(2-Ethylhexyl)phthalate	mg/kg		4.52E+01	9.30E-01	ND					ND					ND					6.00E-02	B			
VOLATILE ORGANIC COMPOUNDS																								
Acetone	mg/kg		7.76E+02	2.50E+00	ND					ND					2.00E-02	J				ND				
Bromomethane	mg/kg		1.09E+01		ND					ND					ND					2.60E-03	B			
Chloromethane	mg/kg		4.85E+01	1.00E-01	ND					ND					ND					1.90E-03	J			
Methylene chloride	mg/kg		8.41E+01	2.00E+00	5.00E-03	B				7.80E-03	B				5.40E-03	B				2.40E-03	B			
Toluene	mg/kg		1.55E+03	5.00E-02	3.10E-03	J				4.90E-03	J				3.30E-03	J				ND				
p-Cymene	mg/kg		1.55E+03		ND					ND					ND					ND				

Table 2-1

**Surface and Depositional Soil Analytical Results
Supplemental Site Investigation
Former Washrack Building 1740, Soldiers Chapel, Parcel 127(7)
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 5)

Parcel		PPMP-127-GP02						PPMP-127-GP03						PPMP-127-GP04						PPMP-127-GP05						PPMP-127-GP06					
Sample Location		PPMP-127						PPMP-127						PPMP-127						PPMP-127						PPMP-127					
Sample Number		KR0003						KR0005						KR0009						KR0011						KR0013					
Sample Date		13-Jan-99						13-Jan-99						28-Jan-99						13-Jan-99						13-Jan-99					
Sample Depth (Feet)		0-1						0-1						0-1						0-1						0-1					
Parameter	Units	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV					
METALS																															
Aluminum	mg/kg	1.39E+04			YES	YES	7.44E+03				YES	1.11E+04	J		YES	YES	7.03E+03				YES	9.47E+03				YES	YES				
Antimony	mg/kg	ND					ND					ND					ND					ND					YES	YES			
Arsenic	mg/kg	4.60E+00			YES		4.90E+00				YES	4.20E+00			YES		7.10E+00			YES		4.80E+00				YES	YES				
Barium	mg/kg	1.29E+02		YES			4.87E+01					8.71E+01	J				9.84E+01					3.48E+02			YES		YES				
Beryllium	mg/kg	1.10E+00		YES		YES	4.10E-01	J				6.80E-01	J				7.20E-01					9.80E-01			YES						
Cadmium	mg/kg	ND					ND					ND					3.00E+00		YES		YES	1.20E+00			YES						
Calcium	mg/kg	3.41E+04		YES			2.02E+03		YES			1.32E+03	J				4.04E+03		YES			8.29E+03			YES						
Chromium	mg/kg	2.77E+01			YES	YES	1.68E+01				YES	8.10E+00	J			YES	3.08E+01			YES	YES	2.98E+01				YES	YES				
Cobalt	mg/kg	ND					ND					4.60E+00	J				1.60E+00	J			YES	9.50E-01	J			YES	YES				
Copper	mg/kg	1.50E+01		YES			7.50E+00					2.02E+01	J	YES			1.76E+01		YES			2.17E+01			YES						
Iron	mg/kg	1.70E+04			YES	YES	1.78E+04			YES	YES	1.04E+04	J		YES	YES	1.47E+04			YES	YES	1.88E+04				YES	YES				
Lead	mg/kg	1.57E+02	J	YES		YES	1.60E+01	J				7.93E+01	J	YES		YES	2.42E+02	J	YES		YES	1.64E+03	J	YES	YES	YES	YES				
Magnesium	mg/kg	2.77E+03	J	YES			5.08E+02	J				4.86E+02	J				8.94E+02	J				1.62E+03	J	YES	YES	YES	YES				
Manganese	mg/kg	7.01E+02			YES	YES	2.71E+02				YES	1.42E+03	J		YES	YES	4.90E+02			YES	YES	9.05E+02				YES	YES				
Mercury	mg/kg	9.80E-02		YES			8.30E-02			YES		5.80E-02					8.80E-02		YES			7.40E-02									
Potassium	mg/kg	1.27E+03		YES			3.95E+02	J				2.67E+02	J				5.12E+02	J				7.32E+02									
Selenium	mg/kg	9.70E-01	J	YES		YES	9.10E-01	J	YES		YES	8.10E-01		YES		YES	7.80E-01	J	YES			1.00E+00	J	YES			YES				
Silver	mg/kg	1.30E+00	J	YES			1.30E+00	J	YES			ND					8.60E-01	J	YES			1.10E+00	J	YES							
Sodium	mg/kg	2.32E+02	J				2.51E+01	J				6.89E+01	B				3.34E+01	J				5.19E+01	J								
Thallium	mg/kg	ND					4.80E-01	J				ND					ND					ND									
Vanadium	mg/kg	1.54E+01				YES	1.39E+01				YES	2.00E+01				YES	1.02E+01			YES		1.48E+01					YES				
Zinc	mg/kg	1.20E+02		YES		YES	2.39E+01					1.76E+01	J				1.33E+02		YES		YES	1.36E+02			YES		YES				
SEMIVOLATILE ORGANIC COMPOUNDS																															
2-Methylnaphthalene	mg/kg	ND					ND					ND					ND					ND									
Acenaphthylene	mg/kg	4.30E-02	J				ND					ND					ND					ND									
Anthracene	mg/kg	3.80E-02	J				ND					ND					ND					ND									
Benzo(a)anthracene	mg/kg	8.50E-02	J				3.50E-02	J				ND					ND					ND									
Benzo(a)pyrene	mg/kg	9.50E-02	J		YES		5.60E-02	J				ND					3.80E-02	J				ND									
Benzo(b)fluoranthene	mg/kg	1.00E-01	J				4.20E-02	J				ND					4.50E-02	J				ND									
Benzo(ghi)perylene	mg/kg	7.60E-02	J				5.00E-02	J				ND					ND					ND									
Benzo(k)fluoranthene	mg/kg	1.00E-01	J				6.80E-02	J				ND					ND					ND									
Butyl benzyl phthalate	mg/kg	ND					ND					ND					ND					ND									
Carbazole	mg/kg	ND					ND					ND					ND					ND									
Chrysene	mg/kg	9.10E-02	J				4.10E-02	J				ND					ND					ND									
Di-n-butyl phthalate	mg/kg	ND					ND					5.70E-02	B				ND					ND									
Di-n-octyl phthalate	mg/kg	ND					ND					ND					ND					ND									
Dibenz(a,h)anthracene	mg/kg	ND					ND					ND					ND					ND									
Fluoranthene	mg/kg	1.10E-01	J			YES	5.30E-02	J				ND					4.40E-02	J				ND									
Indeno(1,2,3-cd)pyrene	mg/kg	5.60E-02	J				4.70E-02	J				ND					ND					ND									
Naphthalene	mg/kg	ND					ND					ND					ND					ND									
Phenanthrene	mg/kg	5.60E-02	J				ND					ND					ND					ND									
Pyrene	mg/kg	1.10E-01	J			YES	4.30E-02	J				ND					3.80E-02	J				ND									
bis(2-Ethylhexyl)phthalate	mg/kg	8.10E-02	B				5.20E-02	B				ND					1.40E-01	B				ND									
VOLATILE ORGANIC COMPOUNDS																															
Acetone	mg/kg	1.10E-02	B				3.60E-02	J				ND					1.60E-02	B				2.40E-02	B								
Bromomethane	mg/kg	2.00E-03	B				2.00E-03	B				ND					2.70E-03	B				2.10E-03	B								
Chloromethane	mg/kg	ND					ND					ND					ND					ND									
Methylene chloride	mg/kg	2.90E-03	B				2.70E-03	B				3.10E-03	B				2.70E-03	B				2.20E-03	B								
Toluene	mg/kg	ND					ND					ND					ND					ND									
p-Cymene	mg/kg	ND					5.00E-03	J				ND					ND					ND									

Table 2-1

**Surface and Depositional Soil Analytical Results
Supplemental Site Investigation
Former Washrack Building 1740, Soldiers Chapel, Parcel 127(7)
Fort McClellan, Calhoun County, Alabama**

(Page 3 of 5)

Parcel	PPMP-127-GP07 PPMP-127 KR0015 28-Jan-99 0-1						PPMP-127-GP08 PPMP-127 KR0017 28-Jan-99 0-1					PPMP-127-GP09 PPMP-127 KR0019 28-Jan-99 0-1					PPMP-127-GP10 PPMP-127 KR0021 29-Jan-99 0-1					PPMP-127-GP11 PPMP-127 KR0023 29-Jan-99 0-1											
Sample Location	Sample Number	Sample Date	Sample Depth (Feet)																														
Parameter	Units	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV		
METALS																																	
Aluminum	mg/kg	6.61E+03	J			YES	8.52E+03	J		YES	YES	9.62E+03	J		YES	YES	1.24E+04	J		YES	YES	1.99E+04	J		YES	YES	YES	YES					
Antimony	mg/kg	ND					ND					ND					ND					ND											
Arsenic	mg/kg	3.50E+00			YES		3.80E+00			YES		3.70E+00			YES		6.80E+00			YES		6.00E+00				YES							
Barium	mg/kg	1.15E+02	J				8.97E+01	J				7.62E+01	J				2.27E+01	J				1.16E+02	J				YES						
Beryllium	mg/kg	9.20E-01		YES			7.70E-01					8.50E-01		YES			3.40E-01	J				9.40E-01			YES								
Cadmium	mg/kg	4.10E-01	J	YES			ND					ND					ND					ND											
Calcium	mg/kg	1.60E+04	J	YES			5.11E+03	J	YES			1.65E+04	J	YES			1.45E+03	J				4.79E+04	J	YES									
Chromium	mg/kg	1.28E+01	J			YES	1.08E+01	J			YES	1.36E+01	J			YES	2.26E+01	J			YES	2.96E+01	J			YES				YES	YES		
Cobalt	mg/kg	4.60E+00	J				5.00E+00	J				3.80E+00	J				1.90E+00	J				3.50E+00	J										
Copper	mg/kg	1.18E+01	J				9.60E+00	J				1.03E+01	J				1.02E+01	J				2.47E+01	J	YES									
Iron	mg/kg	1.13E+04	J		YES	YES	1.17E+04	J		YES	YES	9.18E+03	J		YES	YES	3.12E+04	J		YES	YES	2.06E+04	J			YES	YES			YES	YES	YES	
Lead	mg/kg	7.48E+01	J	YES		YES	3.86E+01	J				7.04E+01	J	YES		YES	1.31E+01	J				5.32E+01	J		YES				YES		YES	YES	
Magnesium	mg/kg	2.25E+03		YES			1.09E+03		YES			2.67E+03		YES			2.74E+02	J				1.41E+03			YES								
Manganese	mg/kg	6.43E+02	J		YES	YES	9.61E+02	J		YES	YES	4.79E+02	J		YES	YES	1.12E+02	J			YES	2.46E+02	J							YES			
Mercury	mg/kg	6.70E-02					5.70E-02					5.10E-02					1.10E-01		YES		YES	1.50E-01			YES			YES				YES	
Potassium	mg/kg	6.49E+02					3.99E+02	J				5.35E+02	J				3.06E+02	J				1.41E+03			YES				YES			YES	
Selenium	mg/kg	5.70E-01	J	YES			8.50E-01		YES		YES	5.40E-01	J	YES			1.00E+00		YES		YES	9.70E-01			YES				YES			YES	
Silver	mg/kg	ND					ND					ND					ND					ND											
Sodium	mg/kg	1.18E+02	J				6.74E+01	B				1.07E+02	B				7.30E+01	B				3.66E+02	J										
Thallium	mg/kg	ND					ND					ND					4.40E-01	B				9.50E-01	B			YES							
Vanadium	mg/kg	1.65E+01				YES	1.83E+01				YES	1.56E+01				YES	4.46E+01				YES	3.68E+01								YES		YES	
Zinc	mg/kg	7.05E+01	J	YES		YES	4.24E+01	J	YES			5.71E+01	J	YES		YES	1.96E+01	J				1.13E+02	J	YES					YES			YES	
SEMIVOLATILE ORGANIC COMPOUNDS																																	
2-Methylnaphthalene	mg/kg	ND					ND					ND					ND					ND											
Acenaphthylene	mg/kg	ND					2.10E-01	J				ND					2.70E-01	J				4.00E-01	J										
Anthracene	mg/kg	ND					2.00E-01	J			YES	ND					1.30E-01	J			YES	3.20E-01	J					YES				YES	
Benzo(a)anthracene	mg/kg	6.80E-02	J				2.60E-01	J				3.60E-02	J				3.70E-01	J				5.10E-01											
Benzo(a)pyrene	mg/kg	8.80E-02	J		YES		4.10E-01			YES	YES	4.60E-02	J				7.00E-01			YES	YES	1.00E+00				YES	YES			YES	YES		
Benzo(b)fluoranthene	mg/kg	8.30E-02	J				4.20E-01					4.90E-02	J				4.90E-01					7.80E-01											
Benzo(ghi)perylene	mg/kg	5.20E-02	J				2.90E-01	J				ND					3.50E-01	J				9.20E-01											
Benzo(k)fluoranthene	mg/kg	1.00E-01	J				5.40E-01					5.90E-02	J				6.50E-01					1.10E+00											
Butyl benzyl phthalate	mg/kg	ND					ND					ND					3.60E-01	J			YES	1.10E-01	J										
Carbazole	mg/kg	ND					4.30E-02	J				ND					ND					ND											
Chrysene	mg/kg	8.20E-02	J				3.30E-01	J				4.60E-02	J				3.90E-01					5.50E-01											
Di-n-butyl phthalate	mg/kg	ND					ND					ND					5.00E-01	B				8.40E-01											
Di-n-octyl phthalate	mg/kg	ND					ND					ND					7.20E-02	J				ND											
Dibenz(a,h)anthracene	mg/kg	ND					1.20E-01	J		YES		ND					1.70E-01	J		YES		3.70E-01	J			YES							
Fluoranthene	mg/kg	1.40E-01	J			YES	4.60E-01				YES	ND					3.60E-01	J			YES	5.10E-01										YES	
Indeno(1,2,3-cd)pyrene	mg/kg	4.70E-02	J				2.80E-01	J				ND					3.50E-01	J				7.50E-01											
Naphthalene	mg/kg	ND					ND					ND					4.30E-02	J	YES			ND											
Phenanthrene	mg/kg	4.80E-02	J				9.30E-02	J				ND					3.80E-02	J				1.20E-01	J								YES		YES
Pyrene	mg/kg	1.10E-01	J			YES	3.60E-01	J			YES	ND					4.00E-01				YES	3.70E-01	J					YES				YES	
bis(2-Ethylhexyl)phthalate	mg/kg	ND					5.90E-02	B				6.30E-02	B				1.00E+00	B			YES	2.10E-01	B										
VOLATILE ORGANIC COMPOUNDS																																	
Acetone	mg/kg	ND					3.30E-02	J				ND					ND					ND											
Bromomethane	mg/kg	ND					ND					ND					ND					ND											
Chloromethane	mg/kg	ND					ND					ND					ND					ND											
Methylene chloride	mg/kg	3.10E-03	B				3.30E-03	B				2.80E-03	B				3.20E-03	B				3.50E-03	B										
Toluene	mg/kg	ND					ND					ND					ND					ND											
p-Cymene	mg/kg	ND					ND					ND					ND					ND											

Table 2-1

**Surface and Depositional Soil Analytical Results
Supplemental Site Investigation
Former Washrack Building 1740, Soldiers Chapel, Parcel 127(7)
Fort McClellan, Calhoun County, Alabama**

(Page 4 of 5)

Parcel		PPMP-127-GP12						PPMP-127-GP13					
Sample Location		PPMP-127						PPMP-127					
Sample Number		KR0025						KR0027					
Sample Date		28-Jan-99						28-Jan-99					
Sample Depth (Feet)		0- 1						0- 1					
Parameter	Units	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV		
METALS													
Aluminum	mg/kg	1.05E+04	J		YES	YES	8.33E+03	J		YES	YES		
Antimony	mg/kg	ND					ND						
Arsenic	mg/kg	3.70E+00			YES		3.30E+00			YES			
Barium	mg/kg	1.28E+02	J	YES			2.65E+02	J	YES			YES	
Beryllium	mg/kg	1.10E+00		YES		YES	1.60E+00		YES			YES	
Cadmium	mg/kg	ND					4.80E-01	J	YES				
Calcium	mg/kg	6.39E+03	J	YES			3.32E+04	J	YES				
Chromium	mg/kg	6.10E+00	J			YES	8.30E+00	J				YES	
Cobalt	mg/kg	4.30E+00	J				4.90E+00	J					
Copper	mg/kg	7.10E+00	J				1.53E+01	J	YES				
Iron	mg/kg	8.58E+03	J		YES	YES	5.85E+03	J		YES	YES		
Lead	mg/kg	1.72E+01	J				8.69E+01	J	YES			YES	
Magnesium	mg/kg	1.52E+03		YES			9.67E+03		YES				
Manganese	mg/kg	2.51E+03	J	YES	YES	YES	5.52E+02	J		YES	YES	YES	
Mercury	mg/kg	4.10E-02					8.70E-02		YES				
Potassium	mg/kg	4.26E+02	J				1.31E+03		YES				
Selenium	mg/kg	6.80E-01		YES			7.30E-01		YES				
Silver	mg/kg	ND					ND						
Sodium	mg/kg	7.04E+01	B				1.69E+02	J					
Thallium	mg/kg	ND					ND						
Vanadium	mg/kg	1.55E+01				YES	7.70E+00					YES	
Zinc	mg/kg	1.27E+01	J				2.01E+02	J	YES			YES	
SEMIVOLATILE ORGANIC COMPOUNDS													
2-Methylnaphthalene	mg/kg	ND					8.70E-02	J					
Acenaphthylene	mg/kg	ND					ND						
Anthracene	mg/kg	ND					ND						
Benzo(a)anthracene	mg/kg	ND					ND						
Benzo(a)pyrene	mg/kg	ND					ND						
Benzo(b)fluoranthene	mg/kg	ND					ND						
Benzo(ghi)perylene	mg/kg	ND					ND						
Benzo(k)fluoranthene	mg/kg	ND					ND						
Butyl benzyl phthalate	mg/kg	ND					6.20E-02	J					
Carbazole	mg/kg	ND					ND						
Chrysene	mg/kg	ND					4.00E-02	J					
Di-n-butyl phthalate	mg/kg	ND					ND						
Di-n-octyl phthalate	mg/kg	ND					ND						
Dibenz(a,h)anthracene	mg/kg	ND					ND						
Fluoranthene	mg/kg	ND					4.10E-02	J					
Indeno(1,2,3-cd)pyrene	mg/kg	ND					ND						
Naphthalene	mg/kg	ND					4.10E-02	J	YES				
Phenanthrene	mg/kg	ND					9.70E-02	J					
Pyrene	mg/kg	ND					3.50E-02	J					
bis(2-Ethylhexyl)phthalate	mg/kg	ND					1.30E-01	B					
VOLATILE ORGANIC COMPOUNDS													
Acetone	mg/kg	ND					1.70E-02	J					
Bromomethane	mg/kg	ND					ND						
Chloromethane	mg/kg	ND					ND						
Methylene chloride	mg/kg	2.40E-03	B				2.70E-03	B					
Toluene	mg/kg	ND					ND						
p-Cymene	mg/kg	ND					ND						

Table 2-1

**Subsurface Soil Sample Results
Former Base Service Station, Parcels 21(7) and 22(7)
Fort McClellan, Calhoun County, Alabama**

(Page 4 of 4)

Analyses performed by Quanterra Environmental Services using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods, including Update III methods where applicable.

^a Background. Concentration listed is two times the arithmetic mean of background metals concentration given in Science Applications International Corporation (1998), *Final Background Metals Survey Report*, Fort McClellan, Alabama, July.

^b Residential human health site-specific screening level (SSSL) and ecological screening value (ESV) as given in IT Corporation (2000) *Final Human Health and Ecological Screening Values and PAH Background Summary Report*, Fort McClellan, Calhoun County, Alabama, July.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).

J - Result is greater than stated method detection limit but less than or equal to specified reporting limit.

mg/kg - Milligrams per kilogram

ND - Not detected

Qual - Data validation qualifier

Table 2-2

**Subsurface Soil Analytical Results
Supplemental Site Investigation
Former Washrack Building 1740, Soldier's Chapel Parcel 127(7)
Fort McClellan, Cahoun County, Alabama**

(Page 1 of 3)

Parcel				PPMP-127-GP01				PPMP-127-GP02				PPMP-127-GP03				PPMP-127-GP04				PPMP-127-GP05				PPMP-127-GP06			
Sample Location				PPMP-127				PPMP-127				PPMP-127				PPMP-127				PPMP-127				PPMP-127			
Sample Number				KR0002				KR0004				KR0008				KR0010				KR0012				KR0014			
Sample Date				13-Jan-99				13-Jan-99				13-Jan-99				28-Jan-99				13-Jan-99				13-Jan-99			
Sample Depth (Feet)				1-4				3-6				3-6				6-9				3-6				1-3			
Parameter	Units	BKG ^a	SSSL ^b	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL
METALS																											
Aluminum	mg/kg	1.36E+04	7.80E+03	9.77E+03			YES	9.01E+03			YES	8.76E+03			YES	1.22E+04	J		YES	9.86E+03			YES	8.40E+03			YES
Arsenic	mg/kg	1.83E+01	4.26E-01	5.80E+00			YES	1.11E+01			YES	8.00E+00			YES	6.00E+00			YES	1.29E+01			YES	3.40E+00			YES
Barium	mg/kg	2.34E+02	5.47E+02	7.79E+01				3.35E+01				3.06E+01				2.69E+01	J			8.02E+01				9.18E+01			
Beryllium	mg/kg	8.60E-01	9.60E+00	8.10E-01				5.70E-01	J			3.20E-01	J			3.70E-01	J			7.00E-01				6.50E-01			
Cadmium	mg/kg	2.20E-01	6.25E+00	ND				ND				ND				ND				8.50E-01		YES		ND			
Calcium	mg/kg	6.37E+02		1.94E+03		YES		2.05E+03		YES		4.52E+02	J			1.13E+03	J	YES		2.27E+03		YES		1.68E+03		YES	
Chromium	mg/kg	3.83E+01	2.32E+01	3.63E+01			YES	2.09E+01				1.60E+01				2.26E+01	J			2.00E+01				1.85E+01			
Cobalt	mg/kg	1.75E+01	4.68E+02	ND				ND				ND				2.10E+00	J			ND				8.20E-01	J		
Copper	mg/kg	1.94E+01	3.13E+02	8.20E+00				1.91E+01				8.50E+00				1.08E+01	J			3.08E+01		YES		9.00E+00			
Iron	mg/kg	4.48E+04	2.34E+03	4.45E+04			YES	3.33E+04			YES	3.45E+04			YES	2.45E+04	J		YES	3.89E+04			YES	1.66E+04			YES
Lead	mg/kg	3.85E+01	4.00E+02	1.43E+01	J			1.01E+01	J			9.20E+00	J			1.19E+01	J			7.05E+01	J	YES		1.38E+02	J	YES	
Magnesium	mg/kg	7.66E+02		4.01E+02	J			2.57E+02	J			2.78E+02	J			5.05E+02	J			5.04E+02	J			3.12E+02	J		
Manganese	mg/kg	1.36E+03	3.63E+02	7.78E+02			YES	1.10E+02				4.68E+01				8.61E+01	J			3.83E+02			YES	6.93E+02			YES
Mercury	mg/kg	7.00E-02	2.33E+00	5.70E-02				1.10E-01		YES		5.80E-02				5.90E-02				1.50E-01		YES		5.90E-02			
Nickel	mg/kg	1.29E+01	1.54E+02	6.50E+00				8.70E+00				2.90E+00	J			6.60E+00				1.04E+01				5.40E+00			
Potassium	mg/kg	7.11E+02		5.54E+02	J			5.12E+02	J			3.09E+02	J			4.21E+02	J			5.26E+02	J			2.59E+02	J		
Selenium	mg/kg	4.70E-01	3.91E+01	1.70E+00	J	YES		1.50E+00	J	YES		1.70E+00	J	YES		9.60E-01		YES		2.00E+00	J	YES		6.80E-01	J	YES	
Silver	mg/kg	2.40E-01	3.91E+01	2.90E+00	J	YES		2.10E+00	J	YES		2.40E+00	J	YES		ND				2.40E+00	J	YES		1.10E+00	J	YES	
Sodium	mg/kg	7.02E+02		2.42E+01	J			2.78E+01	J			2.62E+01	J			4.97E+01	B			3.79E+01	J			2.00E+01	J		
Thallium	mg/kg	1.40E+00	5.08E-01	ND				ND				4.10E-01	J			5.90E-01	B		YES	ND				ND			
Vanadium	mg/kg	6.49E+01	5.31E+01	2.50E+00	B			1.58E+01				7.50E+00				3.74E+01				7.90E+00				8.60E+00			
Zinc	mg/kg	3.49E+01	2.34E+03	2.01E+01				3.00E+01				1.33E+01				2.01E+01	J			7.94E+01		YES		2.82E+01			
SEMIVOLATILE ORGANIC COMPOUNDS																											
Acenaphthylene	mg/kg		4.63E+02	4.00E-02	J			ND				ND				ND				ND				ND			
Benzo(a)anthracene	mg/kg		8.51E-01	3.80E-02	J			ND				ND				ND				ND				ND			
Benzo(a)pyrene	mg/kg		8.51E-02	7.20E-02	J			ND				ND				ND				ND				ND			
Benzo(b)fluoranthene	mg/kg		8.51E-01	6.20E-02	J			ND				ND				ND				ND				ND			
Benzo(ghi)perylene	mg/kg		2.32E+02	4.60E-02	J			ND				ND				ND				ND				ND			
Benzo(k)fluoranthene	mg/kg		8.51E+00	5.70E-02	J			ND				ND				ND				ND				ND			
Chrysene	mg/kg		8.61E+01	4.20E-02	J			ND				ND				ND				ND				ND			
Indeno(1,2,3-cd)pyrene	mg/kg		8.51E-01	4.40E-02	J			ND				ND				ND				ND				ND			
Pyrene	mg/kg		2.33E+02	5.20E-02	J			ND				ND				ND				ND				ND			
bis(2-Ethylhexyl)phthalate	mg/kg		4.52E+01	6.80E-02	B			4.90E-02	B			4.80E-02	B			ND				6.50E-02	B			5.10E-02	B		
VOLATILE ORGANIC COMPOUNDS																											
Acetone	mg/kg		7.76E+02	1.40E-01	J			1.00E-01	J			4.10E-02	J			1.10E-02	J			5.10E-01	J			2.10E+00	J		
Bromomethane	mg/kg		1.09E+01	2.30E-03	B			1.80E-03	B			1.70E-03	B			ND				2.30E-03	B			2.40E-03	B		
Methylene chloride	mg/kg		8.41E+01	2.30E-03	B			2.80E-03	B			3.10E-03	B			2.50E-03	B			3.00E-03	B			2.90E-03	B		
Trichlorofluoromethane	mg/kg		2.33E+03	ND				ND				ND				ND				ND				3.00E-03	J		

Table 2-2

**Subsurface Soil Analytical Results
Supplemental Site Investigation
Former Washrack Building 1740, Soldier's Chapel Parcel 127(7)
Fort McClellan, Cahoun County, Alabama**

(Page 2 of 3)

Parcel		PPMP-127-GP07				PPMP-127-GP08				PPMP-127-GP09				PPMP-127-GP10				PPMP-127-GP11				PPMP-127-GP12				PPMP-127-GP13			
Sample Location		PPMP-127				PPMP-127				PPMP-127				PPMP-127				PPMP-127				PPMP-127				PPMP-127			
Sample Number		KR0016				KR0018				KR0020				KR0022				KR0024				KR0026				KR0028			
Sample Date		28-Jan-99				28-Jan-99				28-Jan-99				29-Jan-99				29-Jan-99				28-Jan-99				28-Jan-99			
Sample Depth (Feet)		1-3				2-5				3-6				6-9				6-9				3-5				6-9			
Parameter	Units	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL
METALS																													
Aluminum	mg/kg	9.93E+03	J		YES	1.13E+04	J		YES	1.23E+04	J		YES	8.70E+03	J		YES	1.09E+04	J		YES	7.66E+03	J			1.43E+04	J	YES	
Arsenic	mg/kg	3.90E+00			YES	5.30E+00			YES	7.40E+00			YES	5.80E+00			YES	8.40E+00			YES	1.03E+01			YES	4.00E+00			
Barium	mg/kg	7.02E+01	J			6.43E+01	J			4.31E+01	J			1.59E+02	J			2.59E+01	J			2.20E+01	J			3.71E+01	J		
Beryllium	mg/kg	6.20E-01				3.40E-01	J			5.20E-01	J			8.40E-01				5.40E-01	J			3.90E-01	J			3.10E-01	J		
Cadmium	mg/kg	ND				ND				ND				7.20E-01		YES		ND				ND				ND			
Calcium	mg/kg	1.43E+03	J	YES		6.38E+02	J	YES		2.40E+03	J	YES		1.15E+04	J	YES		1.39E+03	J	YES		6.32E+01	J			1.08E+04	J	YES	
Chromium	mg/kg	5.92E+01	J	YES	YES	3.09E+01	J		YES	2.02E+01	J			1.59E+01	J			2.06E+01	J			1.79E+01	J			1.27E+01	J		
Cobalt	mg/kg	6.60E+00				2.44E+01		YES		2.60E+00	J			3.90E+00	J			2.70E+00	J			1.70E+00	J			3.20E+00	J		
Copper	mg/kg	1.01E+01	J			8.70E+00	J			1.58E+01	J			1.31E+01	J			1.48E+01	J			1.45E+01	J			1.07E+01	J		
Iron	mg/kg	1.51E+04	J		YES	2.35E+04	J		YES	3.71E+04	J		YES	1.19E+04	J		YES	3.63E+04	J		YES	3.18E+04	J		YES	1.58E+04	J		
Lead	mg/kg	1.42E+01	J			2.01E+01	J			1.08E+01	J			2.07E+02	J	YES		1.02E+01	J			7.30E+00	J			1.73E+01	J		
Magnesium	mg/kg	9.02E+02		YES		3.39E+02	J			4.68E+02	J			1.94E+03		YES		2.66E+02	J			2.07E+02	J			5.72E+03		YES	
Manganese	mg/kg	5.23E+02	J		YES	9.49E+02	J		YES	7.05E+01	J			7.07E+02	J		YES	1.10E+02	J			6.40E+01	J			1.30E+02	J		
Mercury	mg/kg	5.30E-02				6.70E-02				8.40E-02		YES		7.00E-02		YES		1.10E-01		YES		4.30E-02				5.90E-02			
Nickel	mg/kg	1.01E+01				6.10E+00				7.00E+00				5.70E+00				8.40E+00				4.50E+00	J			6.80E+00			
Potassium	mg/kg	3.13E+02	J			3.86E+02	J			8.51E+02		YES		7.32E+02		YES		4.18E+02	J			4.83E+02	J			4.79E+02	J		
Selenium	mg/kg	7.10E-01		YES		1.00E+00		YES		1.50E+00		YES		8.50E-01		YES		1.30E+00		YES		1.50E+00		YES		5.90E-01		YES	
Silver	mg/kg	ND				ND				ND				ND				ND				ND				ND			
Sodium	mg/kg	5.87E+01	B			3.94E+01	B			6.06E+01	B			1.15E+02	B			5.44E+01	B			3.93E+01	B			7.86E+01	B		
Thallium	mg/kg	ND				ND				5.20E-01	B		YES	ND				6.60E-01	B		YES	ND				ND			
Vanadium	mg/kg	2.05E+01				3.48E+01				3.72E+01				1.80E+01				3.83E+01				3.46E+01				3.00E+01			
Zinc	mg/kg	3.19E+01	J			2.34E+01	J			2.13E+01	J			3.26E+02	J	YES		2.36E+01	J			1.77E+01	J			2.51E+01	J		
SEMIVOLATILE ORGANIC COMPOUNDS																													
Acenaphthylene	mg/kg	ND				ND				ND				ND				ND				ND				ND			
Benzo(a)anthracene	mg/kg	ND				ND				ND				ND				ND				ND				ND			
Benzo(a)pyrene	mg/kg	ND				ND				ND				ND				ND				ND				ND			
Benzo(b)fluoranthene	mg/kg	ND				ND				ND				ND				ND				ND				ND			
Benzo(ghi)perylene	mg/kg	ND				ND				ND				ND				ND				ND				ND			
Benzo(k)fluoranthene	mg/kg	ND				ND				ND				ND				ND				ND				ND			
Chrysene	mg/kg	ND				ND				ND				ND				ND				ND				ND			
Indeno(1,2,3-cd)pyrene	mg/kg	ND				ND				ND				ND				ND				ND				ND			
Pyrene	mg/kg	ND				ND				ND				ND				ND				ND				ND			
bis(2-Ethylhexyl)phthalate	mg/kg	ND				ND				ND				ND				ND				ND				ND			
VOLATILE ORGANIC COMPOUNDS																													
Acetone	mg/kg	1.50E+00	B			2.20E-02	J			4.70E-02	J			3.70E-02	J			8.70E-02	J			1.30E-02	J			5.60E-02	J		
Bromomethane	mg/kg	ND				ND				ND				ND				ND				ND				ND			
Methylene chloride	mg/kg	2.50E-03	B			2.40E-03	B			2.60E-03	B			3.50E-03	B			3.10E-03	B			3.80E-03	B			3.20E-03	B		
Trichlorofluoromethane	mg/kg	ND				ND				ND				ND				ND				ND				ND			

Table 2-2

**Subsurface Soil Analytical Results
Supplemental Site Investigation
Former Washrack Building 1740, Soldier's Chapel Parcel 127(7)
Fort McClellan, Cahoun County, Alabama**

(Page 3 of 3)

Parcel		
Sample Location		
Sample Number		
Sample Date		
Sample Depth (Feet)		
Parameter	Units	>SSSL
METALS		
Aluminum	mg/kg	YES
Arsenic	mg/kg	YES
Barium	mg/kg	
Beryllium	mg/kg	
Cadmium	mg/kg	
Calcium	mg/kg	
Chromium	mg/kg	
Cobalt	mg/kg	
Copper	mg/kg	
Iron	mg/kg	YES
Lead	mg/kg	
Magnesium	mg/kg	
Manganese	mg/kg	
Mercury	mg/kg	
Nickel	mg/kg	
Potassium	mg/kg	
Selenium	mg/kg	
Silver	mg/kg	
Sodium	mg/kg	
Thallium	mg/kg	
Vanadium	mg/kg	
Zinc	mg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS		
Acenaphthylene	mg/kg	
Benzo(a)anthracene	mg/kg	
Benzo(a)pyrene	mg/kg	
Benzo(b)fluoranthene	mg/kg	
Benzo(ghi)perylene	mg/kg	
Benzo(k)fluoranthene	mg/kg	
Chrysene	mg/kg	
Indeno(1,2,3-cd)pyrene	mg/kg	
Pyrene	mg/kg	
bis(2-Ethylhexyl)phthalate	mg/kg	
VOLATILE ORGANIC COMPOUNDS		
Acetone	mg/kg	
Bromomethane	mg/kg	
Methylene chloride	mg/kg	
Trichlorofluoromethane	mg/kg	

Table 2-2

**Subsurface Soil Analytical Results
Supplemental Site Investigation
Former Washrack Building 1740, Soldier's Chapel Parcel 127(7)
Fort McClellan, Calhoun County, Alabama**

(Page 3 of 3)

Analyses performed by Quanterra Environmental Services using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods, including Update III methods where applicable.

^a Background. Concentration listed is two times the arithmetic mean of background metals concentration given in

Science Applications International Corporation (1998), *Final Background Metals Survey Report*, Fort McClellan, Alabama, July.

^b Residential human health site-specific screening level (SSSL) and ecological screening value (ESV) as given in IT Corporation (2000) *Final Human Health and Ecological Screening Values and PAH Background Summary Report*, Fort McClellan, Calhoun County, Alabama, July.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).

J - Result is greater than stated method detection limit but less than or equal to specified reporting limit.

mg/kg - Milligrams per kilogram

ND - Not detected

Qual - Data validation qualifier



LEGEND

UNIMPROVED ROADS AND PARKING

PAVED ROADS AND PARKING

BUILDING

TOPOGRAPHIC CONTOURS
(CONTOUR INTERVAL - 5 FOOT)

TREES / TREELINE

PARCEL BOUNDARY

UTILITY POLE

SANITARY SEWER LINE

STORM DRAINAGE LINE

EXISTING GROUNDWATER SAMPLE LOCATION

EXISTING SURFACE AND SUBSURFACE SOIL SAMPLE LOCATION

EXISTING GROUNDWATER SURFACE AND SUBSURFACE SOIL SAMPLE LOCATION

EXISTING DEPOSITIONAL SOIL SAMPLE LOCATION

ANALYTE DETECTED IN METHOD BLANK AT CONCENTRATION GREATER THAN THE REPORTING LIMIT (AND GREATER THAN ZERO)

RESULT IS GREATER THAN STATED METHOD DETECTION LIMIT BUT LESS THAN OR EQUAL TO SPECIFIED REPORTING LIMIT

SITE SPECIFIC SCREENING LEVELS

MILLIGRAMS PER LITER

MILLIGRAMS PER KILOGRAMS

FIGURE 2-2

SOIL AND GROUNDWATER SAMPLE LOCATIONS EXCEEDING RESIDENTIAL HUMAN HEALTH SSSLs FORMER WASHRACK BUILDING 1740, SOLDIER'S CHAPEL PARCEL 127(7)

U. S. ARMY CORPS OF ENGINEERS

MOBILE DISTRICT

FORT MCLELLAN

CALHOUN COUNTY, ALABAMA

Contract No. DACA21-96-D-0018

IT CORPORATION

A Member of The IT Group

Table 2-3

**Groundwater Analytical Results
Supplemental Site Investigation
Former Washrack Building 1740, Soldier's Chapel Parcel 127(7)
Fort McClellan, Calhoun County, Alabama**

Parcel Sample Location Sample Number Sample Date				PPMP-127-GP01 PPMP-127 KR3001 29-Jan-99				PPMP-127-GP02 PPMP-127 KR3002 01-Feb-99				PPMP-127-GP03 PPMP-127 KR3003 04-Feb-99			
Parameter	Units	BKG	SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL
METALS															
Aluminum	mg/L	2.34E+00	1.56E+00	5.45E-01	J			2.83E+00	J	YES	YES	2.16E+01	J	YES	YES
Arsenic	mg/L	1.78E-02	4.00E-05	ND				ND				1.68E-02			YES
Barium	mg/L	1.27E-01	1.10E-01	4.75E-02	J			1.03E-01	J			3.88E-01		YES	YES
Beryllium	mg/L	1.24E-03	3.12E-03	ND				ND				3.90E-03	J	YES	YES
Calcium	mg/L	5.65E+01		5.38E+01				1.05E+01				6.05E+01		YES	
Chromium	mg/L		4.69E-03	ND				7.00E-03	J		YES	4.32E-02			YES
Cobalt	mg/L	2.34E-02	9.39E-02	ND				1.82E-02	J			1.77E-02	J		
Copper	mg/L	2.55E-02	6.26E-02	ND				8.50E-03	J			2.96E-02		YES	
Iron	mg/L	7.04E+00	4.69E-01	1.01E+00	J		YES	5.58E+00	J		YES	4.03E+01	J	YES	YES
Lead	mg/L	7.99E-03	1.50E-02	ND				5.30E-03				1.88E-02		YES	YES
Magnesium	mg/L	2.13E+01		5.74E+00				5.10E+00				1.23E+01			
Manganese	mg/L	5.81E-01	7.35E-02	7.43E-02			YES	5.61E-01			YES	5.33E-01			YES
Mercury	mg/L		4.60E-04	ND				ND				1.30E-04	J		
Nickel	mg/L		3.13E-02	ND				2.78E-02	J			6.35E-02			YES
Potassium	mg/L	7.20E+00		1.21E+00	J			3.07E+00	J			3.91E+00	J		
Sodium	mg/L	1.48E+01		3.22E+00	J			3.61E+00	J			6.23E+00			
Vanadium	mg/L	1.70E-02	1.10E-02	ND				1.15E-02	J		YES	4.46E-02	J	YES	YES
Zinc	mg/L	2.20E-01	4.69E-01	3.51E-02				4.94E-01		YES	YES	2.02E-01			
VOLATILE ORGANIC COMPOUNDS															
Acetone	mg/L		1.56E-01	1.60E-03	J			1.10E-02	B			4.30E-03	B		
Carbon tetrachloride	mg/L		4.00E-04	ND				9.40E-03			YES	ND			
Chloroform	mg/L		1.15E-03	1.40E-04	B			3.00E-03	B		YES	3.60E-04	B		
Chloromethane	mg/L		3.92E-03	2.40E-04	J			ND				ND			
Methylene chloride	mg/L		7.85E-03	ND				1.00E-03	B			1.20E-03	B		

Analyses performed by Quanterra Environmental Services using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods, including Update III methods where applicable.

^a Background. Concentration listed is two times the arithmetic mean of background metals concentration given in Science Applications International Corporation (1998), *Final Background Metals Survey Report*, Fort McClellan, Alabama, July.

^b Residential human health site-specific screening level (SSSL) and ecological screening value (ESV) as given in IT Corporation (2000) *Final Human Health and Ecological Screening Values and PAH Background Summary Report*, Fort McClellan, Calhoun County, Alabama, July.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).

J - Result is greater than stated method detection limit but less than or equal to specified reporting limit.

mg/L - milligrams per liter

ND - Not detected

Qual - Data validation qualifier

Volatile Organic Compounds. Six volatile organic compounds (VOC) were detected in surface soil samples. None of the VOCs were detected at concentrations exceeding SSSLs.

2.3 Subsurface Soil Sampling

Thirteen subsurface soil samples were collected from soil borings at the Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7), as shown on Figure 2-1. As shown on Table 2-2, two metals, including aluminum and chromium, exceeded the residential human health SSSLs and background concentrations. Samples with analytical results exceeding the SSSLs are presented on Figure 2-2.

Metals. The concentrations of aluminum (one location) and chromium (one location) exceeded residential human health SSSLs and background concentrations.

2.4 Groundwater Sampling

Three temporary wells were sampled at the Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7). The well/groundwater sample locations are shown on Figure 2-1. Analytical results were compared to the human health SSSLs and metals background screening values. As shown on Table 2-3, seven metals and two VOCs exceeded the human health SSSLs and background concentrations.

Metals. The concentrations of seven metals, including aluminum, barium, beryllium, iron, lead, vanadium, and zinc, exceeded residential human health SSSLs and background concentrations in groundwater at Parcel 127(7). Concentrations of aluminum and zinc exceeded residential human health SSSLs and background concentrations in groundwater at temporary well PPMP-127-GP02. The remaining compounds were detected in the groundwater sample from PPMP-127-GP03.

Volatile Organic Compounds. Two VOCs, carbon tetrachloride and chloroform, were detected at concentrations exceeding residential human health SSSLs. The carbon tetrachloride was detected at 0.0094 milligrams per liter, and chloroform was detected at a concentration of 0.003 milligrams per liter at sample location PPMP-127-GP02.

2.5 Water Level Measurements and Groundwater Flow

The depth to groundwater was measured in three temporary wells at the Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7) following procedures outlines in Section 4.18 of

the SAP (IT, 2000). Measurements were referenced to the top of the polyvinyl chloride (PVC) stickup. A groundwater elevation map, constructed from March 13, 2000, data, is presented as Figure 2-3. Based on the March groundwater levels, horizontal groundwater flow is to the north.

3.0 Proposed Field Activities

3.1 Environmental Sampling

The proposed environmental sampling program during the supplemental SI at the Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7) includes the installation and sampling of five residuum wells and one deep well. Groundwater samples will be collected from the proposed wells and analyzed to provide data in order to determine the horizontal and vertical extent of groundwater contamination.

3.2 Residuum Monitoring Well Installation

Five permanent residuum monitoring wells will be installed at the Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7). One permanent residuum monitoring well will be installed adjacent to each existing temporary well: PPMP-127-GP01, PPMP-127-GP02, and PPMP-127-GP03. The temporary wells will be abandoned in accordance with Alabama Department of Environmental Management guidelines. The proposed permanent residuum monitoring well locations are shown on Figure 3-1. The exact monitoring well locations will be determined in the field by the on-site geologist based on actual field conditions.

Soil samples will be collected at 5-foot intervals to the total depth of the hole during hollow-stem auger drilling. Samples will be collected using a 2-inch diameter or-larger split-spoon sampler. Lithologic samples will be collected for all monitoring wells during drilling to provide a detailed lithologic log. All soil borings will be logged in accordance with American Society for Testing and Materials Method D 2488 using the Unified Soil Classification System. All soil samples will be screened in the field using a photoionization detector (PID) to verify the potential presence of contamination. None of the subsurface soil samples will be sent to the laboratory. The permanent residuum monitoring wells will be drilled, installed, and developed as specified in Section 4.8 and Appendix C of the SAP (IT, 2000). Groundwater samples will not be collected from residuum wells for a period of at least 14 days after well development.

3.3 Bedrock Monitoring Well Installation

One permanent bedrock monitoring well will be installed at the Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7) adjacent to proposed residuum well PPMP-127-MW02. The proposed bedrock monitoring well location is shown on Figure 3-1. The permanent bedrock monitoring well will be drilled, installed, and developed as specified in Section 4.8 and Appendix C of the SAP (IT, 2000).

The bedrock monitoring well borehole will be drilled using a combination of air rotary drilling and bedrock coring techniques. A drill rig able to employ both methods will be used, if possible, to minimize mobilization costs. The bedrock monitoring well will be drilled a minimum of 20 feet into competent bedrock.

The bedrock well will be installed prior to installation of the residuum wells. Split-spoon samples will not be collected in the bedrock boring. An air rotary rig with a 12-inch percussion bit or rotary bit will be used to drill the borehole from land surface to 5 feet into competent bedrock. An 8-inch ID carbon steel International Pipe Standard (IPS) outer casing will then be installed into the borehole from land surface to 5 feet into bedrock. The depth of the 8-inch carbon steel casing is anticipated to be approximately 35 feet below ground surface, based on the refusal depth of nearby temporary monitoring well PPMP-127-GP02. A minimum of 2-inch annular space between the outer casing and borehole wall will be required. The 8-inch carbon steel outer casing will be grouted in-place using a tremie pipe suspended in the annulus outside of the casing. Bentonite-cement grout will be mixed using approximately 6.5 to 7 gallons of water, and 5 pounds of bentonite per 94 pound bag of Type I Portland cement. After the grout has cured a minimum of 48 hours, the borehole will be advanced an additional 15 feet utilizing a PQ wireline core barrel, which will be used to collect core samples continuously. The hole depth into competent bedrock will be increased if groundwater is not encountered. After completion of core sample collection, a 7 7/8-inch air percussion bit will be used to ream the hole a minimum of 15 feet below the bottom of the surface casing and into competent bedrock. The compressor on the drill rig will be equipped with an air filter between the compressor and the drill bit. Water will be the only lubricant allowed during drilling operations.

A 4-inch monitoring well will be installed inside the outer casing at the proposed well location. The well casing diameter will consist of new, 4-inch ID, Schedule 80, threaded, flush-joint, PVC pipe. Attached to the bottom of the well casing will be a section of new threaded, flush joint 0.010-inch continuous wrap PVC well screen, approximately 10 to 15 feet long. Attached to the bottom of the well will be a sump, approximately 3 to 5 feet long, composed of new, 4-inch ID, Schedule 80, threaded, flush joint PVC pipe. After the casing and screen material are

lowered into the boring, a gravel pack will be installed around the well screen and the inside casing will be grouted from the top of the gravel pack to land surface. The gravel pack will be tremied into place from the bottom of the sump to approximately 5 feet above the top of the screen. The gravel pack will consist of 20/40 silica sand. A bentonite seal, approximately 5 feet thick, will be placed above the gravel pack. The remaining annular space will be grouted with a bentonite-cement mixture seal to ground surface. The bedrock monitoring well will be developed as specified in Section 4.8 and Appendix C of the SAP (IT, 2000). Groundwater samples will not be collected from the bedrock well for a period of at least 14 days after well development.

3.4 Groundwater Sampling and Rationale

Groundwater samples will be collected from the residuum and bedrock wells installed at the site. Groundwater sampling rationale is presented in Table 3-1. The groundwater sample designations and required QA/QC sample quantities are listed in Table 3-2. The groundwater samples will be collected in accordance with the procedures specified in the SAP (IT, 2000).

3.5 Investigative-Derived Waste Management and Disposal

Investigative-derived waste (IDW) will be managed and disposed of as outlined in Appendix D of the SAP (IT, 2000). The IDW expected to be generated from the field sampling at FTMC will consist of soils from the hollow-stem auger sampling, purge water from monitoring well development and sampling activities, decontamination fluids, spent well materials, and personal protective equipment. The IDW will be staged inside the fenced area near Buildings 335 and 336 while awaiting final disposal.

3.6 Site-Specific Safety and Health

Health and safety requirements for the field activities are provided in the SSHP attachment for the Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7) (IT, 1998b). The SSHP attachment will be used in conjunction with the installation-wide safety and health plan.

Table 3-1

**Site Sampling Rationale
Supplemental Site Investigation
Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Media	Site Sampling Rationale
PPMP-127-MW01	Groundwater	A permanent residuum groundwater monitoring well will be installed to replace temporary well PPMP-127-GP01. The monitoring well will be constructed to an estimated depth of about 35 feet below ground surface. Groundwater samples will be collected and analyzed for VOCs to verify the horizontal extent of carbon tetrachloride in groundwater. Temporary well PPMP-127-GP01 will be abandoned per ADEM guidelines.
PPMP-127-MW02	Groundwater	A permanent residuum groundwater monitoring well will be installed to replace temporary well PPMP-127-GP02. The monitoring well will be constructed to an estimated depth of about 35 feet below ground surface. Groundwater samples will be collected and analyzed for VOCs to verify the horizontal extent of carbon tetrachloride in groundwater. Temporary well PPMP-127-GP02 will be abandoned per ADEM guidelines.
PPMP-127-MW03	Groundwater	A permanent residuum groundwater monitoring well will be installed to replace temporary well PPMP-127-GP03. The monitoring well will be constructed to an estimated depth of about 30 feet below ground surface. Groundwater samples will be collected and analyzed for VOCs to verify the horizontal extent of carbon tetrachloride in groundwater. Temporary well PPMP-127-GP03 will be abandoned per ADEM guidelines.
PPMP-127-MW04	Groundwater	A permanent residuum groundwater monitoring well will be installed about 140 feet north of temporary well PPMP-127-GP02. The monitoring well will be constructed to an estimated depth of about 30 feet below ground surface. Groundwater samples will be collected and analyzed for VOCs to determine the horizontal extent of carbon
PPMP-127-MW05	Groundwater	A permanent residuum groundwater monitoring well will be installed about 100 feet east-northeast of temporary well PPMP-127-GP02. The monitoring well will be constructed to an estimated depth of about 30 feet below ground surface. Groundwater samples will be collected and analyzed for VOCs to determine the horizontal extent of carbon
PPMP-127-MW06	Groundwater	A permanent bedrock groundwater monitoring well will be installed adjacent to proposed well location PPMP-127-MW02. The monitoring well will be installed as a double cased well, with the outer casing installed to approximately 35 feet below ground surface, and the inner casing installed to approximately 75 feet below ground surface. Groundwater samples will be collected and analyzed for VOCs to determine the horizontal extent of carbon

Table 3-2

Groundwater Sample Designations and QA/QC Sample Quantities
Supplemental Site Investigation
Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Matrix	Sample Depth (ft)	QA/QC Samples			Analytical Suite
				Field Duplicates	Field Splits	MS/MSD	
PPMP-127-MW01	PPMP-127-MW01-GW-KRR3001-REG	Groundwater	a				TCL VOCs
PPMP-127-MW02	PPMP-127-MW02-GW-KRR3002-REG	Groundwater	a				TCL VOCs
PPMP-127-MW03	PPMP-127-MW03-GW-KRR3003-REG	Groundwater	a	PPMP-127-MW03-GW-KRR3004-FD	PPMP-127-MW03-GW-KRR3005-FS		TCL VOCs
PPMP-127-MW04	PPMP-127-MW04-GW-KRR3006-REG	Groundwater	a				TCL VOCs
PPMP-127-MW05	PPMP-127-MW05-GW-KRR3007-REG	Groundwater	a			PPMP-127-MW05-GW-KRR3007-MS/MSD	TCL VOCs
PPMP-127-MW06	PPMP-127-MW06-GW-KRR3008-REG	Groundwater	a				TCL VOCs

^aSample depth will depend on where sufficient first water is encountered to collect a water sample.

FD - Field duplicate.

FS - Field split.

MS/MSD - Matrix spike/matrix spike duplicate.

MW - Monitoring well.

QA/QC - Quality assurance/quality control.

REG - Field sample.

TCL - Target compound list.

VOC - Volatile organic compound.

4.0 Project Schedule

The project schedule for the supplemental SI activities will be provided by the IT Project Manager to BRAC Cleanup Team on a monthly basis.

5.0 References

Environmental Science and Engineering, Inc., 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

IT Corporation (IT), 2000, *Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama*, August.

IT Corporation (IT), 1998a, *Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama*, October.

IT Corporation (IT), 1998b, *Final Site-Specific Field Sampling Plan for the Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)*, December.

List of Abbreviations and Acronyms

Abs	skin absorption
AC	hydrogen cyanide
AcB2	Anniston and Allen gravelly loams, 2 to 6 percent slopes, eroded
AcC2	Anniston and Allen gravelly loams, 6 to 10 percent slopes, eroded
AcD2	Anniston and Allen gravelly loams, 10 to 15 percent slopes, eroded
AcE2	Anniston and Allen gravelly loams, 15 to 25 percent slopes, eroded
ACGIH	American Conference of Governmental Industrial Hygienists
ADEM	Alabama Department of Environmental Management
AEL	airborne exposure limit
AL	Alabama
amb.	Amber
ANAD	Anniston Army Depot
APT	armor piercing tracer
ASP	Ammunition Supply Point
ASR	Archives Search Report, July 1999
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
B	analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero)
BCT	BRAC Cleanup Team
BFB	bromofluorobenzene
bgs	below ground surface
bkg	background
bls	below land surface
BOD	biological oxygen demand
BRAC	Base Realignment and Closure
Braun	Braun Intertec Corporation
BTEX	benzene, toluene, ethylbenzene, and xylenes
BTOC	below top of casing
BZ	breathing zone
C	ceiling limit value
Ca	carcinogen
CCAL	continuing calibration
CCB	continuing calibration blank
CD	compact disc
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CFC	chlorofluorocarbon
CG	cyanogen chloride
ch	inorganic clays of high plasticity
CK	carbonyl chloride
cl	inorganic clays of low to medium plasticity
Cl.	chlorinated
CLP	Contract Laboratory Program
CN	chloroacetophenone
CNB	chloroacetophenone, benzene, and carbon tetrachloride
CNS	chloroacetophenone, chloropicrin, and chloroform
COC	chain of custody

COE	Corps of Engineers
Con	skin or eye contact
CRL	certified reporting limit
CRZ	contamination reduction zone
CS	ortho-chlorobenzylidene-malononitrile
CSEM	conceptual site exposure model
ctr.	container
CWA	chemical warfare agent
CWM	chemical warfare materials, clear wide mouth
CX	dichloroformoxime
D	duplicate
DANC	decontamination agent, non-corrosive
°C	degrees Celsius
°F	degrees Fahrenheit
DDT	dichlorodiphenyltrichloroethane
DEP	depositional soil
DI	deionized
DIMP	di-isopropylmethylphosphonate
DMMP	dimethylmethylphosphonate
DOD	U.S. Department of Defense
DP	direct-push
DPDO	Defense Property Disposal Office
DQO	data quality objective
DRMO	Defense Reutilization and Marketing Office
DS	deep (subsurface) soil
DS2	Decontamination Solution Number 2
E&E	Ecology and Environment, Inc.
EBS	environmental baseline survey
Elev.	elevation
EM	electromagnetic
EM31	Geonics Limited EM31 Terrain Conductivity Meter
EM61	Geonics Limited EM61 High-Resolution Metal Detector
EOD	explosive and ordnance disposal
EODT	explosive and ordnance disposal team
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentration
EPIC	Environmental Photographic Interpretation Center
ER	equipment rinsate
ESE	Environmental Science and Engineering, Inc.
ESV	ecological screening value
E-W	east to west
EZ	exclusion zone
FB	field blank
FD	field duplicate
FedEx	Federal Express, Inc.
FFE	field flame expedient
Fil	filtered
Flt	filtered

FMP 1300	Former Motor Pool 1300 Site
Frtn	fraction
FS	field split
ft	feet
ft/ft	feet per foot
FTA	fire training area
FTMC	Fort McClellan
g	gram
G-856	Geometrics, Inc. G-856 magnetometer
G-858G	Geometrics, Inc. G-858G magnetic gradiometer
gal	gallon
gal/min	gallons per minute
GB	sarin
gc	clay gravels; gravel-sand-clay mixtures
GC	gas chromatograph
GC/MS	gas chromatograph/mass spectrometer
GFAA	graphite furnace atomic absorption
gm	silty gravels; gravel-sand-silt mixtures
gp	poorly graded gravels; gravel-sand mixtures
gpm	gallons per minute
GPR	ground-penetrating radar
GPS	global positioning system
GSBP	Ground Scar Boiler Plant
GSSI	Geophysical Survey Systems, Inc.
GW	groundwater
gw	well-graded gravels; gravel-sand mixtures
HA	hand auger
HCl	hydrochloric acid
HD	distilled mustard
HDPE	high-density polyethylene
Herb.	herbicides
HNO ₃	nitric acid
hr	hour
H&S	health and safety
HSA	hollow stem auger
HTRW	hazardous, toxic, and radioactive waste
I	out of control, data rejected due to low recovery
ICAL	initial calibration
ICB	initial calibration blank
ICP	inductively-coupled plasma
ICS	interference check sample
ID	inside diameter
IDL	instrument detection limit
IDLH	immediately dangerous to life or health
IDW	investigation-derived waste
IMPA	isopropylmethyl phosphonic acid
in.	inch
Ing	ingestion

List of Abbreviations and Acronyms (Continued)

Inh	inhalation	ND	not detected	qty	quantity
IP	ionization potential	NE	no evidence	Qual	qualifier
IPS	International Pipe Standard	NFA	No Further Action	R	rejected
IRDMIS	Installation Restoration Data Management Information System	ng/L	nanograms per liter	RCRA	Resource Conservation and Recovery Act
IT	IT Corporation	NGVD	National Geodetic Vertical Datum	ReB3	Rarden silty clay loams
ITEMS	IT Environmental Management System TM	NIC	notice of intended change	REG	field sample
J	estimated concentration	NIOSH	National Institute for Occupational Safety and Health	REL	recommended exposure limit
JeB2	Jefferson gravelly fine sandy loam, 2 to 6 percent slopes, eroded	No.	number	RFA	request for analysis
JeC2	Jefferson gravelly fine sandy loam, 6 to 10 percent slopes, eroded	NOAA	National Oceanic and Atmospheric Administration	RI	remedial investigation
JfB	Jefferson stony fine sandy loam, 0 to 10 percent slopes have strong slopes	NR	not requested	RL	reporting limit
K	conductivity	ns	nanosecond	RPD	relative percent difference
L	lewisite; liter	N-S	north to south	RRF	relative response factor
LC ₅₀	lethal concentration for 50 percent of population tested	nT	nanotesla	RSD	relative standard deviation
LD ₅₀	lethal dose for 50 percent of population tested	NTU	nephelometric turbidity unit	RTK	real-time kinematic
l	liter	O&G	oil and grease	SAD	South Atlantic Division
LCS	laboratory control sample	OD	outside diameter	SAE	Society of Automotive Engineers
LEL	lower explosive limit	OE	ordnance and explosives	SAIC	Science Applications International Corporation
LT	less than the certified reporting limit	oh	organic clays of medium to high plasticity	SAP	installation-wide sampling and analysis plan
max	maximum	ol	organic silts and organic silty clays of low plasticity	sc	clayey sands; sand-clay mixtures
MDL	method detection limit	OP	organophosphorus	Sch.	schedule
mg/kg	milligrams per kilogram	OSHA	Occupational Safety and Health Administration	SD	sediment
mg/L	milligrams per liter	OWS	oil/water separator	SDG	sample delivery group
mg/m ³	milligrams per cubic meter	oz	ounce	SDZ	safe distance zone
mh	inorganic silts, micaceous or diatomaceous fine, sandy or silt soils	PAH	polynuclear aromatic hydrocarbon	SEMS	Southern Environmental Management & Specialties
MHz	megahertz	Pb	lead	SFSP	site-specific field sampling plan
µg/g	micrograms per gram	PCB	polychlorinated biphenyl	SGF	standard grade fuels
µg/kg	micrograms per kilogram	PCE	perchlorethene	SHP	installation-wide safety and health plan
µg/L	micrograms per liter	PDS	Personnel Decontamination Station	SI	site investigation
µmhos/cm	micromhos per centimer	PEL	permissible exposure limit	sm	silty sands; sand-silt mixtures
min	minimum	Pest.	pesticide	SOP	standard operating procedure
MINICAMS	miniature continuous air sampling system	PG	professional geologist	sp	poorly graded sands; gravelly sands
ml	inorganic silts and very fine sands	PID	photoionization detector	SP	sump pump
mL	milliliter	PkA	Philo and Stendal soils local alluvium, 0 to 2 percent slopes	Ss	stony rough land, sandstone series
mm	millimeter	POL	petroleum, oils, and lubricants	SS	surface soil
MOGAS	motor vehicle gasoline	PP	peristaltic pump	SSC	site-specific chemical
MPA	methyl phosphonic acid	ppb	parts per billion	SSHO	site safety and health officer
MR	molasses residue	PPE	personal protective equipment	SSHP	site-specific safety and health plan
MS	matrix spike	ppm	parts per million	SSSL	site-specific screening level
mS/cm	milliSiemens per centimeter	PPMP	Print Plant Motor Pool	STB	supertropical bleach
MSD	matrix spike duplicate	ppt	parts per thousand	STEL	short-term exposure limit
msl	mean sea level	PSSC	potential site-specific chemical	STOLS	Surface Towed Ordnance Locator System [®]
MtD3	Montevallo shaly, silty clay loam, 10 to 40 percent slopes , severely eroded	pt	peat or other highly organic silts	Std. units	standard units
mV	millivolts	PVC	polyvinyl chloride	SU	standard unit
MW	monitoring well	QA	quality assurance	SVOC	semivolatile organic compound
N/A	not applicable; not available	QA/QC	quality assurance/quality control	SW	surface water
NAD	North American Datum	QAP	installation-wide quality assurance plan	SW-846	U.S. EPA <i>Test Methods for Evaluating Solid Waste: Physical/Chemical Methods</i>
NAD83	North American Datum of 1983	QC	quality control	SZ	support zone
NAVD88	North American Vertical Datum of 1988	QST	QST Environmental Inc.	TAL	target analyte list

List of Abbreviations and Acronyms (Continued)

TAT	turn around time
TB	trip blank
TCE	trichloroethene
TCL	target compound list
TCLP	toxicity characteristic leaching procedure
TDGCL	thiodiglycol
TDGCLA	thiodiglycol chloroacetic acid
TERC	Total Environmental Restoration Contract
TIC	tentatively identified compounds
TLV	threshold limit value
TN	Tennessee
TOC	top of casing, total organic carbon
TPH	total petroleum hydrocarbons
TRADOC	U.S. Army Training and Doctrine Command
TRPH	total recoverable petroleum hydrocarbons
TWA	time weighted average
UCL	upper confidence limit
UCR	upper certified range
UJ	not detected above reporting limit; result should be estimated
USACE	U.S. Army Corps of Engineers
USAEC	U.S. Army Environmental Center
USAEHA	U.S. Army Environmental Hygiene Agency
USAMCLS	U.S. Army Chemical School
USATEU	U.S. Army Technical Escort Unit
USATHAMA	U.S. Army Toxic and Hazardous Material Agency
USCS	Unified Soil Classification System
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
UXO	unexploded ordnance
VOA	volatile organic analyte
VOC	volatile organic compound
VOH	volatile organic hydrocarbon
VQlfr	validation qualifier
VQual	validated qualifier
VX	nerve agent (O-ethyl-S- [diisopropylaminoethyl]-methylphosphonothiolate)
Weston	Roy F. Weston, Inc.
WP	installation-wide work plan
WS	watershed
WSA	Watershed Screening Assessment
WWI	World War I
WWII	World War II
XRF	x-ray fluorescence
yd ³	cubic yards